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THE

NORTH-AMERICAN REVIEW.

Elements of Logick, or a Summary of the General Principles and Different Modes of Reasoning. By Levi Hedge, A.M. Professor of Logick, Metaphysicks and Ethicks in Harvard College. Cambridge, printed at the University press, by Hilliard and Metcalf. 1816.

Be not alarmed gentle readers of novels and odes at the name of logick, for we do not intend to use this word as a charm to conjure up the ghosts of the *irrefragable* doctors of the fifteenth century, in their syllogistick terrours, nor do we propose to puzzle and bewilder you with dilemmas and sophisms, and barbarous Latin. Though we cannot promise not to be dull, we will endeavour to avoid being absurd or unintelligible. As the art of which we speak has been the source of much ridicule, we expect the lovers of wit to read our remarks with a wistful gravity, that by knowing something of the subject, they may better relish the ridicule, just as one listens more attentively to a speaker whom he has seen taken off by a mimick. And we have the authority of Milton himself to require the attention of those whose less vigorous natural powers need artificial corroboration, to whom he strenuously recommends this art, and for whose particular use he made a book on the subject; at the same time we ought not to conceal that he does not advise such as possess superiour native faculties to "subject themselves to these analytical tortures." Yet we confess that we shall be more pleased, at present, if they follow Milton's example, for he was a laborious cultivator of what the *doctors* called the *divine art of logick*, insomuch, that while he was yet a lad in the university, he composed a poetical enigma on one of the ten predicaments.

Logick is a different thing as it is exhibited by different writers; we may well laugh at it in Hudibras and Martinus Scriblerus, be mazed with it in Burgersdicius, find it a collection of useful rules and just remarks in Collard, and in

Duncan and Condielac it will appear to be a profound and dignified science. This is not peculiar to logick, it may be said of any science, the rudiments of which were known before the sixteenth century. Chemistry, for example, (which now attracts philosophers, ladies, men of the world, all, in short, who pretend to a smattering in letters,) sprung from the absurd alchymy of the middle ages; and yet, though we may be amused with the labours of some indefatigable alchymist, who spent his life in melting and dissolving copper, expecting every new experiment would transmute it into gold, we are not therefore the less interested in Davy's discovery of a metal in potash, having the lustre of silver. Physiology and anatomy are considered as useful and reputable studies, and they have been the occasion of absurdities quite as wild, though not so perplexing, as those of the logicians. Take for instance, Plato's account of the animal economy, which Longinus calls divine, and to write which he supposes the author must have been supernaturally inspired. The lungs are there supposed to be placed near the heart, as a pillow for that organ, and likewise as a ventilator to moderate its temperature, lest in the effervescence of passion, it should be consumed by its own heat. He supposes the liver to be a mirrour, which by the reflection of images, conveys intelligence from the intellectual to the animal soul. Our chemistry has something in common with the alchymy of the "enlightened" doctors, since both treat of the changes caused by corpuscular action. In like manner, propositions and syllogysms belong equally to the antiquated and the modern dialecticks, but the uses of the crucible in the successive stages of one of these sciences, are not more unlike, than those of the proposition, at the different periods of the other.

While a science is in its rudiments, the want of knowledge is supplied by invention. History commenced with fables, in astronomy the imagination supplied the place of the telescope, and instead of investigating the laws of the celestial motions by observation and calculation, a complete system of the heavens was formed at once by imagining the harmonious revolutions of nine concentrick spheres.

Logick gave no play to the fancy, in which circumstance it resembled the scholastick theology. But invention was not on that account the less active. It could not adorn them with wild and false, though splendid and pleasing images, but spent itself in the heavy drudgery of coining "words of little or no meaning," and fabricating skeletons of argument without reasoning. It has thence happened that the reformation of these sciences has been so tardy and difficult; for when men think wrong, there is good hope that they may be brought to think correctly; but when they have formed the habit of repeating words and phrases, without meaning, they are almost beyond the reach of common sense. Theology will probably never be purified from this abuse. The reformation of logick is yet partial and imperfect. The Organon is said to be studied, even at this day, in the university of Oxford. In the Spanish colleges they study the logick of Mendoza, written about two centuries ago. In our own university the students have, till very lately, been required to toil at a work written by the good Dr. Watts, in which there are some remnants of scholastick notions, blended with the just thinking of modern times.

Logick is both an art and a science; it is an art, in as much as it gives rules for the use of language, and the conduct of the understanding in reasoning; as far as it investigates the foundations of evidence and the laws of our intellectual processes, it is a science. It is commonly treated as an art, and as the art of navigation is demonstrated by mathematicks, and that of colouring by chemistry, so the dialectick art is founded upon the science of the mind and of language. The same remark is applicable to the arts generally, but it does not thence follow that an art cannot be practised before its rules are demonstrated, on the contrary, it most frequently happens, that some ingenious artist invents a process for producing a desirable effect, and then the philosophers step in and shew him upon what principles he has succeeded. There were good musicians before the principles of harmony were scientifically understood, and orators and actors were skilled in moving the passions, long before they were analyzed by the philosophers. It is the business of a teacher to prove and illustrate the truth and utility of the rules which he inculcates, and accordingly the modes of teaching any art will vary with its objects, and also with the prevailing habits of thinking. In the history of logick more than in that of any other art, are displayed traces of the progress, the regress, the windings and doublings, of the human mind, from the first rude attemps at investigation, up to the consummation of the art of thinking. In this retrospect we find the logicians and metaphysicians groping during sixteen centuries within the narrow circle, where they had been spell-bound by the genius of Aristotle. By the mist of their comments and refinements, they made the darkness, in which he had enveloped them, more obscure. They did not labour to discover new truths, but laboured to shew that Aristotle had anticipated his successors in every species of knowledge, that he had explored all the secrets of nature, and left to them only to study and admire his works, and eulogise their author. They found something prophetick in his name, and discovered by etymological analysis, that it signified *the organ of truth*. Scaliger calls him the *eagle of human genius*, and others the *Lapis Lydius of philosophers*. According to Suidas he was the *secretary of nature, and dipped his pen in intellect*. Arguments were constructed to prove that his soul was saved, notwithstanding his paganism. Some thought him inspired, and many of the German clergy read passages of his works to their congregations, instead of the Scriptures. It is not surprising that these devout worshippers of the Grecian, were shocked, when Peter Ramus, in the beginning of the sixteenth century, proposed as a theme, that his principles of logick were false and his doctrines pernicious, and defended it against all the doctors and students of the college of Navarre. But the *secretary of nature* had able advocates, who had arguments to advance in his support, other than those which his writings supplied—they caused the profane Ramus to be arraigned before a judicial tribunal, and after four days spent in argument and a change of the court by the substitution of compliant judges, his animadversions upon Aristotle were condemned, and it was prohibited to him to teach or write upon any branch of philosophy. Some idea of this trial may be formed from the debates of the first day, which was taken up in discussing the question, whether a definition of the art is an essential part of a treatise on logick (for by the way, Aristotle's works contain none) and it was decreed by the learned court, that such a definition is not an essential part of a perfect system of logick. But the worshippers of the inventor of syllogisms had not to contend only with a Parisian student, they waged an unequal war with the reviving energies of intellect. Men began to shake off their slumbers and no longer dozing over dogmas and indulging in visions, while the "inspired" soul of Plato unfolded to them

——what vast regions hold
The immortal mind that has forsook
Her mansion in this fleshly nook;

they opened their eyes to the objects that surrounded them, and to discover truth, resorted to nature, its fountain. A spirit of inquiry spread itself in science and religion. Luther, with a rough hand, shook the old fabrick of superstition. Descartes overthrew the fanciful theories which had been called systems of philosophy, and supplied their place with a system of his own, no less imaginary than those he had exploded. But though he did not introduce the true method of investigation, he cleared the way by liberating philosophers from the bondage in which Aristotle had held their understandings, and Plato, their imaginations. Genius was made free, and excited to exertion by the novelty of truth and the prospect of glory. Copernicus revived the true system of the world; Gallileo confirmed and illustrated his doctrines. Kepler announced some of the great laws of matter, which Newton demonstrated, and initiated men into the secrets of physical action. You ask, what part had the logicians in these transactions? While the natural philosophers were taking observations of physical operations, they were observing the philosophers themselves. Descartes made remarks on the mental powers and modes of reasoning. Bacon published his profound views of the methods of inquiry and investigation, by which discoveries could be most successfully made, and the sciences most rapidly advanced. Locke investigated the laws of the mind, while Newton was demonstrating those of matter. He disincumbered the philosophy of the mind from some of the errours and absurdities which still clung to it, analyzed the intellectual powers, and considered to what they are equal, and was the first to assign to language its true importance in the art of thinking. We are not however among those who admire, indiscriminately, whatever he has written. The times in which he wrote, gave to some of his subjects a consequence, which they have since lost. Repetitions frequently occur in his writings. He is sometimes greviously prolix, and there is in some of his arguments more of subtilty than conclusive reasoning.

Since the time of Locke, many profound and luminous treatises have been published, upon the philosophy of the mind and the arts of thinking and reasoning. But it is a long time before a new truth, discovered by the philosopher in his closet, finds its way into the text-book and is used by the pupil at school. In the first place, the philosophers have to dispute a long while among themselves, and are not apt to cease from their warfare of words upon any subject, till a new dispute calls off their attention, and gives them an opportunity to commence hostilities in a different quarter. When they have agreed upon, and ratified an articleof science, it remains sometime, perhaps, a secret to the makers of popular books. At length some one of these authors inserts the novel proposition in his work. If it happen to clash with popular opinion or prejudice, or interfere with the common habits of thinking and acting, a clamour is raised, new parties are formed, and the animosity excited will be inversely as the importance of the subject. Suppose this ferment allayed, and the novelty to be generally acquiesced in, a great obstacle still remains. The superintendants and instructors of colleges and schools, have a certain way of executing their functions, which is rendered easy by habit, and sometimes sacred by prejudice. Pride is also concerned. Men who are in the practice of prescribing and commanding, and such in general are those who superintend education, are not the most ready to admit, that their mode of proceeding can possibly be modified or changed for the better. It is doing very well then if a proposition, which has the assent of the learned and intelligent, comes to be generally acted upon, at the end of one or two centuries. We do not state these facts as altogether subjects of complaint and regret. In most affairs, and to the greater part of mankind, experience is a much safer guide than reason. Things as they exist have a certain congrüity and adaptation, and the utility of any practice or opinion depends no less on its relation to others, than on its intrinsick and absolute character. It is dangerous to be rashly taking to pieces and putting together, lest in our attempts to reform a system, we in the end, find ourselves without one.

A single instance will show, that the logick which has been taught in colleges, is not the same that has been received by the learned. The nature and importance of inductive reasoning was forcibly and clearly stated and illustrated in various parts of lord Bacon's works. By induction we infer general truths from particular facts. Thus the sailor having been accurately guided by the compass in one voyage, does not doubt that the same thing will take place in as many voyages as he has a mind to make. When we see a man thrown into an ecstatic intoxication by breathing nitrous oxid gas, or into a sleep by a dose of opium, we conclude that similar results will take place again, in like circumstances. This impression of the necessary connexion between cause and effect, and of the stability of the laws of nature, is universal; it is a principle of action which all men adopt, and is the same in the conduct of life and in experimental philosophy, that axioms, or the relations of quantity and dimension which are intuitively perceived, are in demonstrative science. Analogy has a near affinity to induction, and is by some confounded with it. It is a mode of reasoning by which from some circumstances of resemblance we infer others. Thus when we see a spacious building with a steeple, we conclude that it contains pews and a pulpit, not because there is supposed to be any connexion between a pulpit, pews, and a steeple; but because we have been accustomed to find them together. It was upon this principle, that Newton, observing water and the diamond to possess a property of refracting light in common with combustible bodies, concluded, that they were combustible. We are generally led to a new truth by analogy. Now these two modes of reasoning are the foundation of all our knowledge, except that belonging to the demonstrative sciences. We say, without qualification, all our knowledge. Almost every action of every man's life, may be resolved into them. We cannot even think without adopting them as first principles and guides. Yet, before the publication of Professor Hedge's book, this method of reasoning had not been justly and adequately described, in any system of logick designed for classical instruction. We have seen but one work of this sort, in which it is mentioned, and that is a "Concise System of *Logicks*," published at New-York, by Mr. William Best. It is there but slightly and hastily treated. There is in many of the logicks an article under the head of induction, but it is not the induction which we use in experimental philosophy and the ordinary affairs of life, and that has been treated of by Bacon and Stewart. This is readily perceived by consulting any of their books ; compare, for instance, the induction in use with that described by Duncan, who has written one of the most philosophical and instructive treatises upon this art. He defines it to be a "way of reasoning where we infer universally concerning any *idea* what we had before affirmed or denied separately, of all its several subdivisions and parts." How can this be applied in experimental philosophy or any other kind of reasoning? When Sir Humphrey Davy had decomposed a mass of potash, and found it to be constituted of a metal of the lustre of silver combined with oxygen, his induction from this experiment was the general proposition, that potash is an oxid of a metal, to which he gave the name of potassium. Now, according to Duncan's definition of inductive reasoning, he must have decomposed all the substances that bear the name of potash, before he could be authorized to draw this conclusion.

Professor Hedge's logick has been put into the hands of the students of Harvard college, and, in our opinion, the course of studies in that institution is thereby much improved. Not that we rank logick among the most important branches of education, for we think that a scholar acquires more skill in the art of reasoning and detecting sophistry, by a study of the first book of Euclid's Elements, than he would obtain by committing to memory all the logical treatises that have been written since the days of Aristotle. And Professor Hedge very liberally and justly remarks, that "the art of reasoning skilfully can be acquired only by a long and careful exercise of the reasoning faculties, on different subjects, and in various ways." Still it is a study highly worthy of attention, and an essential part of a liberal education. This work is well adapted to the purpose for which it was intended. The style is clear and simple, without any violations of propriety, which we have been able to detect, and free from any loose declamation and illtimed attempts at fine writing, and unincumbered with any irrelevant or superfluous matter ; which are circumstances more remarkable than we could wish, in an American literary production. The articles are divided into sections of a convenient length for recitation. Many of the rules are explained by elegant and pleasing illustrations, instead of the usual examples, *man*, *horse*, and *animal*. The author does not profess to make discoveries, or announce any rules or principles, with which well informed men were not already acquainted. His plan is to collect from the former systems of logick, and from the works of Rheid and Stewart, what is suited to his purpose, and mould the materials into a form the most convenient for academical instruction. This plan we think he has judiciously and successfully executed. And it is no small credit to any man, to have made a good book, even upon a subject much less important than that of the present work ; and this praise is greatly enhanced when the object is the improvement of education, which is to make more broad, and deep, and sure, the foundation that supports the whole superstructure of society.

The subject is distributed into three principal divisions ; in the first we have an account of the faculties and properties of the mind which are most important in reasoning ; in the second, terms and propositions are considered, which, taken in connexion with their meaning, are the materials of reasoning ; the third, comprehends the modes in which these materials are wrought up into argumentation by the intellectual machinery, (if we may so speak) which had been described in the first part. We do not propose to go through the chapters of this book in their order, but will only make a few remarks upon those parts, which seem most obviously to invite them. We are apprehensive, that those of our readers who have not been drilled in logical and metaphysical discipline, may have deserted us, to avoid encountering induction and the other enemies to vivacity and amusement, to which they might deem themselves exposed, intending to join us again in some future speculation, where we shall be in the easy pursuit of some more agreeable object. If any of them have had the intrepidity and patience of labour to fare on with us through " rough, dense, and rare," we can give them the satisfaction of knowing, that, without having been conscious of it, they have made a very considerable proficiency in the study of dialecticks. To assure themselves of this acquisition, they have only to change some of the names that they learned at the grammar-school. Let them call the *agents of verbs*, with their *qualifying epithets*, by the name of *terms;* instead of adjective, say *concrete term*, and for phrase say *complex terms*, convert *proper name* into *singular term*, *common name* into *universal term*, and a *noun of multitude* into *collective term*, and they have a greater part of the logical learning of terms. The makers of elementary grammars are not permitted to philosophise, but the philosophical grammarians and the authors of rudiments of logick, have the common right of concisely speculating upon the operations of the mind, and giving some account of the process by which common names or universal terms are formed. The proposition is also the common property of the grammarian and the logician. Here too, each has his own names, for the logician calls a verb a *copula*, and the grammarian, instead of *proposition*, uses the name *sentence*. The logician then proceeds to show how many ways there are of making an assertion, or asking a question, while the grammarian examines the relations which the words have among themselves. All that part of logick, which relates to propositions and syllogisms, is intimately connected with grammar and rhetorick. Under the head of propositions are considered the various forms of expression in which an assertion may be made, or a question asked. The modes and figures of syllogisms, are no more than an enumeration of a number of different forms of expression in which an argument may be stated.

On first looking into this book, it seemed a fault that so much space is assigned to propositions and syllogisms, though they occupy a much greater proportion of most of the other logicks we have seen. If we considered the intrinsick importance of these titles, we should have continued of this opinion, but upon reflecting on the figure they make in literary history, and the frequent allusions of which they are the subjects, some acquaintance with them seems necessary both to the scholar and the general reader. Still we insist that the student should be made to understand, that when he is converting a proposition or changing the figure of a syllogism, he is doing little more than playing upon words.

If any of our readers are not skilled in the syllogistick art, we will initiate them into the mystery. It consists wholly in asserting a thing first generally, and then particularly. For example, your coat is entirely of black—but the cape is part of the coat—therefore the cape is black. In other words, the conclusion is nothing more than a repetition, in different words, of what had been stated in the premises.

Inductive reasoning is said " to be founded on a belief, that the course of nature is founded on uniform laws, and that things will happen in future, as we have observed them to happen in times past. We can have no proof of a permanent connexion between any events, or between any two qualities either of body or mind. The only reason for supposing such a connexion in any instance is, that we have invariably found certain things to have been conjoined in fact; and this experience, in many cases, produces a conviction equal to that of demonstration." p. 91.

We object to the expression that " we can have no proof" in this case, for the author states that we believe in the existence of such a connexion, as much as if it were demonstrated. Now we hold it absurd to believe in a thing, of which we have no evidence. Hume has fabricated an ingenious tissue of argumentation upon this subject, in which he attempts to show that we have no reason to suppose the effect of a mass of asafoetida upon our organs of smell, is less grateful, than that of a new-blown rose. To assert that any event or appearance can take place without any cause, is absurd; and none of the philosophers have denied that effects imply causes. All agree that we can never discover the connexion of cause and effect, by a knowledge of the nature of agents. We know not why the venom of the rattle-snake poisons, while the milk of the cow nourishes. But the proof of a fact and the accounting for it, are very different things; to the confounding of these, Hume's dissertation upon cause and effect, owes all its plausibility. Nobody doubts that there are spots on the sun, though we have no satisfactory solution of the fact. We know not what makes the effluvia of the lily agreeable, and that of the henbane offensive, but of these facts innumerable arguments are drawn from proximity and remoteness in point of time and place, and the reasoning is perfectly regular and logical. We can only object that it is not demonstration, to which it may be replied that it does not claim to be demonstration.

Professor Hedge gives the following account of analogical reasoning, and mentions some characteristicks by which it is distinguished from induction.

> "Inductive and analogical reasoning are so similar in their nature, that it is not easy to point out their specifick difference. The following circumstances appear to mark a distinction, sufficient to justify their being treated as separate articles. First, induction is a process from several individuals of a class to the whole. Its conclusions therefore are always general. But, by analogy, we argue from one individual being to another of the same class, and from one species to another. Secondly, the evidence employed in analogy is wholy *indirect* and *collateral*,—the co-existence of two qualities in one subject affording no evidence of their co-existence in any other. But in the inductive process we have direct evidence, that the property, which we apply to a whole class, exists in many individuals of that class. It is true that in all induction analogy must be used; for we can never separately examine every individual of a whole class however cautiously we may proceed. So far however as we extend our observations and experiments, the evidence is direct; but with regard to the remaining subjects of the class, the conclusion must rest wholly on analogy." p. 102.

Mr. Stewart has made some remarks on experience and analogy, which are equally applicable to analogy and induction. He says that "although the difference between the two sorts of evidence, which are commonly referred to the separate heads of experience and analogy, be rather a difference in degree than in kind, yet it is useful to keep these terms in view, in order to mark the contrast between cases which are separated from each other by a very wide and palpable interval; more especially to mark the difference between an argument from individual to individual of the same species, and an argument from species to species of the same genus. This distinction, however, when accurately examined, turns out to be of a more vague and popular nature than at first sight appears, and instances occasionally present themselves, in which it is difficult to say, of the evidence before us, to which of these descriptions it ought to be referred." Philosophy of the Mind, Vol. 2. p. 350.

From these two quotations we obtain no precise definitions of the words experience, analogy and induction. They do not appear to remain among the unwrought materials of common language, and yet they are not shaped and polished into the exact proportions of science. It is said, that by induction we reason from individuals to the species; by analogy from class to class, and we are immediately afterwards told by Professor Stewart, that these two modes of reasoning cannot always be distinguished from each other. After reading all the ingenious and acute disquisitions upon this subject, we are left unsatisfied and disappointed. We have a vague impression, and the metaphysicians tell us, that analogy and induction are not the same, but when they attempt to point out the difference, they confound them. And yet there seems to be no essential difficulty and obscurity by which we are hindered from retracing our steps in experimental reasoning, as distinctly as we are able to do it in demonstration. Our ideas are clear; and the subject is well understood. There is no dispute or doubt concerning the steps by which we proceed in an experiment and the grounds upon which our conclusion rests. The difficulty then rests wholly in the language, and this, like other metaphisical inquiries, is a dispute about words. Allowing then, that the principles of reasoning from analogy and experience, and by induction are perfectly well understood (and philosophers are very much to blame if they are not so, for they have long spoken of them as subjects of which we have a sufficient knowledge) does this uncertainty arise from not expressing definitely what we clearly perceive, or trying to express what we do not perceive? We think the latter. It seems to us that writers have attempted to point out and exhibit a difference in *kind* where they perceive only a difference in *degree*.

Professor Stewart quotes the following passage from Dr. Reid. "In medicine, physicians must, for the most part, be directed in their prescriptions by analogy. The constitution of one human body is so like that of another, that it is reasonable to think, that what is the cause of health or sickness to one, may have the same effect on another. And is generally found true, though not without some exceptions." Essays on the intellectual Powers, p. 53.

Upon this passage Professor Stewart makes the following remarks. "I am doubtful if this observation be justified by the common use of language; which as far as I am able to judge, uniformly refers the evidence on which a cautious physician proceeds, not to *analogy* but to *experience*. The monk, who (according to popular tradition) having observed the salutary effects of antimony upon some of the lower animals, ventured to prescribe the use of it to some of his own fraternity, might be justly said to reason analogically; in as much as his experience related to one species, and his inference to another." Elements of the Philosophy of the Mind, Vol. 2. p. 358.

This is a distressing sort of disquisition. It is attempting to carry certainty beyond those limits, within which it is confined by the nature of things. It is endeavouring, to arrest and fix the varying shades and tints of meaning, which, though they are objects of perception, are too subtile and ethereal to endure the claims of science. Suppose the monk had made his inference from the Germans to Spaniards, or to the Africans, would it have been on the principles of analogy or experience? We do not doubt whether there is a blue or a green colour; but it is vain to inquire for the precise point in the spectrum, where the blue terminates and the green commences.

We would not be understood to speak disrespectfully of Professor Stewart. We have a great esteem for him. It seems to us, however, that in the above instance and many others, he clothes his subject with a dignity and importance, which are foreign and not at all befiting, and that he sometimes has an air of systematick and general reasoning, when he is in fact making loose detached remarks, only applicable to particular cases. At the conclusion of a chapter, the reader is sometimes left with expectations unsatisfied, and at a loss to discover the object of such extensive preparations and formal proceedings.

But to return to our subject: When the monk had observed the effect of antimony on a dog, why should he make any inference in regard to a man? Because, as Professor Stewart remarks, there is a resemblance between the two subjects, and he would make the inference with greater confidence from one animal to another of the same, than one of a different species. We imagine that this principle prevails in all reasoning from analogy or from induction, and that they are in kind precisely the same. There are degrees in the force of the evidence, founded on the greater or less resemblance of the subject of the experiment and the subject in regard to which the inference is made, but these degrees are not marked by any appropriate terms. It would be vain to attempt such a graduation; at any rate, we cannot expect to find it in the common use of language. When a mass of atmospherick air is decomposed and found to consist of hydrogen and nitrogen in certain proportions, the inference is made, that these constituents exist in all atmospherick air in the same proportion, because, from a thousand circumstances, it is supposed to be the same in different regions. Different men are found to have some resemblance, but they are not so uniformly similar, as different masses of air; and therefore we do not so confidently expect that a favour which excites gratitude in one man, would have the same effect upon all others.

We conclude then, that the ground of our inference is the same whether the argument be by induction or from analogy or experience, and they are but one kind of reasoning. We establish a fact by ordinary experience, a regularly instituted experiment or by what is called reasoning on facts—we then inquire for other similar or analogous cases; we infer some general proposition which we call an induction, a deduction, or reasoning from analogy. The intellectual process is the same. But we do not use the term analogy unless there is some doubt about the similarity of the cases, or where we know it not to be complete. We say analogy exists between two governments or between the fortunes of two individuals, but not between two portions of rain water or mercury chemically considered.